Considerable loss was sustained at a number of places and four persons lost their lives at Lisbon, N. H., in a rush of ice and water in the Ammonoosue River.

Probably the most destructive floods of the month occurred in the Sacramento River of California, due to prolonged and heavy rains over the upper headwaters of that river in the neighborhood of Red Bluff and Kennett, Cal., 30 and 29 inches, respectively, falling at those places during the month. Fortunately the main flood waves came out of the upper Sacramento and Stony Creek, the lower eastern tributaries not contributing largely to the flood waters.

The principal crest at Kennett occurred on the 2d as a result of four consecutive days of heavy rain at that point; 13 inches of rain having fallen in that period. The area covered by this unusually heavy fall was doubtless not great. A second and more general flood wave arose on the 9th; which, though less in volume than the first, was more general in the tributary streams.

There was some overflow in the vicinity of Red Bluff, but the greatest overflow occurred on the left bank of the river between Knights Landing and Colusa, due to the breaking up of the levees that protected Colusa Basin. Local Forecaster Taylor, of Sacramento, furnishes the statements of the number of acres flooded and the loss occasioned by the flood given by Table 2.

TABLE 2.—*Losses due to floods in the Sacramento.*

	Acres.
Total flooded area	150,000
Planted to grain	40,000
Planted to alfalfa	5,000
MONEY LOSS.	*Dollars.*
Crop, seeded	140,000
Levees	100,000
Personal property, houses, fences, etc	50,000
Live stock, cattle, sheep, and hogs	5,000
Railroads, including that due to suspension of business	50,000
Total loss	345,000
Money value saved as result of warnings	35,000

The loss in connection with crops will be much greater provided the land flooded does not drain in time to allow replanting.

The approximate loss outside of California is shown by Table 3 below.

TABLE 3.—*Flood loss and damage, February, 1915.*

State or district.	Tangible property, bridges, highways, cleaning up.	Farm property, live stock.	Crops, prospective.	Suspension of business.	Estimated saved by warnings.
Ohio Valley:					
Pittsburgh district	$50,000			$10,000	$500,000
Parkersburg district				1,000	50,000
Cincinnati district	25,000	1,500		10,000	500,000
Evansville district	1,000	5,000	$3,750	5,000	50,000
South Carolina		100	200	200	14,000
North Carolina	1,500			2,000	5,000
Connecticut Valley	11,000				
James River at Richmond, Va	100			5,000	8,000
Pearl River of Mississippi	1,600	1,500		5,300	6,000
Total	89,600	7,100	3,950	38,500	1,133,000

Hydrographs for typical points on several principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.

SNOWFALL AT HIGH ALTITUDES, FEBRUARY, 1915.

Arizona.—At high elevations such as the San Francisco peaks, Bill Williams Mountain, the higher ranges of Yavapai County and the higher levels of the Graham, and the ranges still farther south, where the precipitation was wholly or mostly in the form of snow, unusual depths are reported.

In the Mogollons, the White and Blue Mountains, and over a large extent of plateau bordering thereon, there have been frequent and heavy snows, with practically no melting. As a result the snow depths at altitudes above 7,500 feet have been increased phenomenally. In the Paradise Creek section of the White Mountains snow stakes were installed some months ago at elevations ranging from 8,000 to 9,800 feet. In this section the average depth of snow on January 28, 1915, was 30 inches. On March 3, less than three weeks later, three stakes were found buried in the snow. The stakes are set vertically in the ground, the tops 90 inches above the surface. In other parts of the field there was practically 9 feet of snow on the ground. There is, therefore, vastly more snow available for runoff this season than in the past, and it is difficult to conceive that the spring melting can occur under weather conditions so unfavorable as to possibly affect the realization of the confidently expected capacity storage in the Roosevelt Reservoir this spring.—*Robert R. Briggs, Section Director.*

California.—The snowfall during the month was very light and confined to the last decade. There is more snow on the ground than at this time last year, and also more than the normal. The snow is hard and well packed and the indications are that there will be ample water for irrigation and power purposes during the coming summer.—*G. H. Willson, District Forecaster.*

Colorado.—The snowfall during February was much below the normal throughout the regions drained by the Yampa, White, and Grand Rivers. On the Gunnison watershed the distribution was irregular, the fall being somewhat above the normal in the upper drainage of the north fork and below the normal in the upper part of the trunk stream. An excess occurred in the South Platte watershed, except near the headwaters, while a slight excess occurred in the middle drainage of the Arkansas, but there was a deficit in the Lake County district, where this river has its source. In general, slightly more than the average snowfall occurred in the Rio Grande drainage area, and a moderate excess in the San Juan and southwestern areas.—*F. H. Brandenburg, Section Director.*

Idaho.—The month of February was one of light snowfall. While the precipitation was normal or above in many places, the greater part of it was in the form of rain, except in the higher mountains. The temperature was generally much above normal, resulting in rapid melting. In all parts of the State there is less than the average amount of snow, and in many places the depth is less than for years at this date. The melting thus far has caused little runoff. The snow is fairly wet, averaging about 28 per cent of its depth in water, where measurements of density have been made. The present outlook is for a decided shortage in the flow of all the streams of the State.—*Edward L. Wells, Section Director.*

Montana.—February was the fourth month with light snowfall throughout Montana. There is practical agree-

ment in a large number of reports from elevated regions that the accumulated depth of snow in the mountains at the close of the month was much below the average. The precipitation records for late fall and winter fully confirm this view of the conditions, since the accumulated deficiency of the last four months is very pronounced in every part of the State. At lower levels the ground has been bare of snow most of the winter, except over a comparatively small area in the north central portion.—*R. F. Young, Section Director.*

Nevada.—February was noteworthy for its frequent and heavy snowstorms. The snowfall was considerably above the normal, particularly in the Sierras. In the Truckee, Carson, and Walker Basins more precipitation occurred in February than in the five preceding months put together. By the close of the month the great deficiency noted at the termination of January, 1915, had been reduced appreciably, though not entirely offset. The general condition of the snow on the ground was reported as loose and favorable for early melting. The prospects for an ample supply of water for irrigation this summer are good.—*H. F. Alciatore, Section Director.*

New Mexico.—The snowfall of February averaged more than 8 inches for the entire State, despite the fact that little or no snow occurred over the lower levels of the southern tier of counties. The seasonal average fall is thus 27.5 inches, or almost 10 inches in excess of the normal, and nearly 5 inches greater than at a like period last season. The mountain areas were well favored, the central and southern especially. Observers report the largest snowfall for several years in the Capitan, White, and Manzano Mountains. The continuation of the cool, comparatively cloudy, wet season, begun in December has been highly favorable to the State in conserving the moisture and adding to the stored depth.

Considerable improvement has occurred over the Canadian and Northeast ranges, and the stored depth over the main range now indicates a fair early flow in that stream. The snowfall over the higher areas tributary to the Pecos, the San Francisco, Gila and Mimbres, Zuñi, and the Rio Grande in New Mexico was large and has further improved conditions on these streams, indicating a good early flow. Improvement has also occurred over the northeast tributaries of the San Juan, and this stream will no doubt have abundant water for all its demands.—*C. E. Linney, Section Director.*

Oregon.—Snowfall was light and by the end of the month many of the south and west slopes of the Cascade range were bare and there was practically no snow on the ground in the cultivated valleys, Fears are entertained that there will be a shortage of water late in the spring for irrigation and placer mining.—*E. A. Beals, District Forecaster.*

South Dakota.—The average snowfall in the Black Hills region, as well as elsewhere in the State, was near normal, but the average amount on ground at the end of March was greater than the normal. Gulches are filled with snow, and in many places thawing and freezing have changed the snow to ice. The outlook for spring soil moisture generally, and for water for irrigation purposes in the Black Hills region, is excellent. Stream flow is somewhat greater than normal, but melting snow has been largely absorbed by the ground.—*M. E. Blystone, Meteorologist.*

Utah.—Substantial gain was made in the accumulated amounts of snow in the mountains and hills of Utah during February. In both the Sevier Lake and the southern portion of the Colorado River watershed the snow is well packed and in favorable condition for late keeping. In Great Salt Lake watershed the available snow is still not up to the normal and the conclusion is drawn that the prospective water supply is less than the average amount.—*A. H. Thiessen, Section Director.*

Wyoming.—Snow depths were substantially increased on the watersheds of the Big Horn, Green, North Platte, Powder, and Snake Rivers during February, but on the watersheds of the Cheyenne, Tongue, and upper Yellowstone there was but little improvement.—*R. Q. Grant, Section Director.*

Washington.—February, 1915, was very similar to February, 1914, in mildness of the weather and deficiency in snowfall. The snowfall in the mountains of Washington was, on the whole, less than in any former February since regular records began.—*G. S. Salisbury, Section Director.*

MEAN LAKE LEVELS DURING FEBRUARY, 1915.

By UNITED STATES LAKE SURVEY.

[Dated: Detroit, Mich., Mar. 4, 1915.]

The following data are reported in the Notice to Mariners of the above date:

Data.	Lakes.			
	Superior.	Michigan and Huron.	Erie.	Ontario.
Mean level during February, 1915:	*Feet.*	*Feet.*	*Feet.*	*Feet.*
Above mean sea level at New York	601.70	579.54	571.41	244.99
Above or below—				
Mean stage of January, 1915	− 0.11	+ 0.10	+ 0.32	+0.29
Mean stage of February, 1914	− 0.51	− 0.54	− 0.30	−0.88
Average stage for February, last 10 years	− 0.09	− 0.54	− 0.27	−0.78
Highest recorded February stage	− 0.78	− 3.18	− 2.34	−2.68
Lowest recorded February stage	+ 0.94	+ 0.38	+ 0.78	+1.16
Probable change during March, 1915	− 0.2	0.0	+ 0.1	+0.1